S P E C T R U M U T I L I Z A T I O N

This portion of the Plan lays the foundation for the efficient and effective utilization of the spectrum. Its purpose is to guide the RPRC in the task of evaluating new applications for the use of radio frequencies in the 821-824/866-869 MHz bands.

TRUNKING

Applicants requesting licenses for five (5) or more channels will be required to trunk those channels. Exceptions to the rule will not be allowed unless an equally spectrum efficient technology is proposed or the applicant can otherwise demonstrate that trunking will not meet the specific operational requirements of the agency.

Applicants requesting licenses for four (4) or less channels may be permitted conventional operation. Small entities, with minimal requirements shall be required to join together in single systems whenever possible.

COVERAGE AREA

The desired coverage of a system is considered to be a

maximum of three (3) miles outside of the boundary of the applicant's jurisdiction. The maximum designed mean signal strength at this contour shall not exceed 40 dBμ (+40 dB above one microvolt per meter) measured with an antenna mounted no less than five feet (5') above ground. Petitions to provide coverage exceeding these parameters will be examined on a case by case basis. Overlap or extended coverage must be minimized even where agencies are proposing to intermix systems for cooperative and/or mutual aid purposes.

ADJACENT CHANNEL ASSIGNMENTS

Adjacent channel assignments will be made when it is determined that the two or more systems will NOT create a signal strength greater than +25 dBμ anywhere within their partners' boundaries.

CO-CHANNEL ASSIGNMENTS

Co-channel assignments will be made when it is determined that the two or more systems will NOT create a signal strength greater than +5 dBμ anywhere within the partners' co-channel boundary.

To achieve the most efficient use of the spectrum, distances between transmitters for co-channel reuse will not be held to a

seventy (70) mile separation in this Plan. Separation of co-channel transmitters will be determined by the coverage needs of the applicant, natural barriers for separation, antennae patterning and limited ERP's where possible.

CHANNEL LOADING CRITERIA

In this Plan, existing loading standards will be applied for voice communications: 70 mobiles per conventional channel, 100 mobiles per trunked channel. For all data only systems, the loading criteria will increase: 100 mobiles per conventional channel and 150 mobiles per trunked channel.

Agencies that support interoperability by permitting Federal use of their frequencies through S-160 (or equivalent) agreements, may augment their channel requirements by a maximum of 2% to account for the increased number of mobile units. Written documentation detailing the expected number of Federal radios involved will be required at the time of application.

In order to conserve spectrum, agencies must demonstrate that the number of radios potentially in use at one time meet the loading requirements. For example, a police department with 50 squad cars each containing a portable and a mobile radio does not signify a channel load of 100 units. Petitions to deviate from this rule will be considered by the RPRC on a case by case basis.

VACATED FREQUENCIES

It is anticipated that as public safety agencies implement 800 MHz radio systems, they will be able to vacate the VHF and UHF frequencies on which they previously operated. The RPRC will apply the three conditions governing frequency give-backs described in the Report and Order:

(1) The new system fully replaces the functions of the old one.

(2) The licensee has no other communications requirements that could be met through the use of the lower frequencies.

(3) The new system has operated satisfactorily for long enough to allow a smooth transition from former operations and to demonstrate its reliability.

All agencies participating in the use of the new 800 MHz spectrum shall prepare and submit a plan for the abandonment of their currently licensed frequencies in the lower bands. The regional planning committees would have the freedom to consider below 800 MHz public safety bands in developing their regional plans, but the licensing of channels in these bands would continue to be conducted through existing frequency coordination procedures.

Frequencies which are to be abandoned by an agency shall not be handed down to another agency within the respective jurisdiction. It is recommended that any jurisdiction wishing to "hand down" frequencies to another agency submit the proper coordination and application forms with the document of release.

INITIAL SPECTRUM ALLOCATION

The methodology used to determine the spectrum allocations at the time of filing this Plan is contained in Appendix G. The allocation itself is contained in Appendix H.

TECHNICAL DESIGN CONSIDERATIONS

This section of the Plan discusses topics which must be considered when engineering a new system.

CHANNELING PLAN

The 25 kHz offset channeling plan established by the National Plan will be required of all systems to be licensed in the 821-824/866-869 MHz bands.

INTEROPERABILITY WITH ADJACENT LOWER BANDS

There are several agencies in the Region currently operating on frequencies in the 806-821/851-866 MHz bands. While most of these agencies may continue operating in the 806-821/851-866 MHz frequencies for several years, many of them will be looking to expand their systems into the new spectrum. Any application submitted under the auspices of this Plan must demonstrate technical ability to provide communication between new and existing systems.

Waivers for technical specifications on existing 800 MHz equipment will be considered on an individual basis.

SYSTEM DESIGN

When designing a system, engineers will be required to minimize the distance between transmitter sites by using a combination of limited Effective Radiated Power (ERP), tower height, type of terrain or any other factors which are technically feasible to minimize adjacent and co-channel interference. Information detailing the methodologies used (including calculations) must be included in the application.

DATA TRANSMISSION

The Wisconsin Region determined the use of radio frequencies for data transmissions was a large "growth" category among agencies in the Region. As stated in the Loading Criteria section of this Plan, data only transmissions, whether for emergency or routine messages, will demand a higher loading standard.

CELLULAR RADIO TECHNOLOGY

Trunking technology is presently considered the most spectrum efficient use of radio transmissions for public safety. Cellular radio technology has so far proven useful only for telephone communications. However, it may, with future technological improvements, prove useful for public safety. Agencies are cautioned that any proposal for the use of cellular

radio technology as an alternative to a trunked radio system must demonstrate that it can provide the same or greater degree of spectrum efficiency as trunking **and** handle communications in an emergency situation.

MOBILE SATELLITE SERVICE (MSS)

During incidents of major proportions such as airliner crashes, earthquakes, tornadoes, floods, forest fires or nuclear reactor calamities, public safety requirements might include the need for long-range communications in and out of a disaster area. The planned Mobile Satellite Service (MSS) may prove to be a viable alternative to land based systems in these situations, once technical innovations are developed which will provide uni-directed or corridor-driven communications over a lengthy distance. This service should be restricted to frequencies above 960 MHz, however, and licensing in the Public Safety spectrum shall be limited to public safety eligibles only.

AIRCRAFT TO GROUND COMMUNICATIONS

The use of any 800 MHz radio in an aircraft shall be restricted. Air to ground transmissions shall be limited to a maximum effective radiated power (ERP) of one (1) Watt.* Unless system design dictates otherwise, tactical transmissions shall be on the mobile relay output or talk-around frequencies only.

Co-channel and adjacent channel users are not required to provide protection to airborne users. No transmissions on limited area channels are allowed above 2,000 feet AGL. In addition, no transmissions are allowed above 5,000 feet AGL even on wide area mutual aid channels.

* Aircraft will be permitted to utilize additional power under 500 feet AGL.

INTEROPERABILITY CONSIDERATIONS

This section of the Plan outlines the steps taken by the Committee to permit Federal, State and Local agencies to coordinate their activities during an emergency or disaster situation.

INTERSYSTEM INTEROPERABILITY

The intent of this Plan is to enhance interagency communication. Extensive mutual aid communication networks already exist throughout the Region. The National Plan has now set aside five (5) channels in the new spectrum for mutual aid. Agencies applying for licenses in the 821-824 and 866-869 MHz bands will be required to explain how they will implement the new Common Channels. They will also be required to explain how they will maintain intercommunication with their neighboring agencies who do not implement the Common Channels but still are dependent upon the applying agency for assistance in an emergency.

COMMON CHANNELS

The Common Channels used in this Region comply with the National Plan and consist of one (1) calling channel and four (4) tactical channels (TAC 1 through TAC 4). (See Table 2).

MUTUAL AID CHANNELS

USAGE	FREQUENCY
Calling Channel	821.0125 MHz *
	866.0125 MHz **
Tactical Channel #1	821.5125 MHz *
	866.5125 MHz **
Tactical Channel #2	822.0125 MHz *
	867.0125 MHz **
Tactical Channel #3	822.5125 MHz *
	867.5125 MHz **
Tactical Channel #4	823.0125 MHz *
	868.0125 MHz **

* = Mobile Frequencies

** = Base Frequencies

T A B L E # 2

Communications on Common Channels use a two-tier structure: initial contact (calling) and working (tactical) channels. These channels are not to be used for daily operations.

The Common Channels are restricted to required intercommunications among agencies that do not have access to other compatible communications channels. A "Primary Dispatch Center" will assign one or more tactical channels for the duration of a specific emergency or incident requiring multi-agency communications.

Because of the wide variance of voice codes among agencies ("ten" signals, alpha-numeric codes, etc.), plain English will used on the Common Channels. The Primary Dispatch Center, with full support of the Regional Committee, will monitor radio traffic, discipline and resolve serious or chronic infractions.

PRIMARY DISPATCH CENTER

The State of Wisconsin will develop a program to implement the National Calling Channel and Tactical Channels with base stations at their sites. Primary Dispatch Centers will be designated by the RPRC as deemed necessary. They will ensure that interoperable tactical channel mobile relays exist in specific areas of the Region. The mobile relay stations will provide the required number of working channels within the Region

necessary to assure interoperable communications between Federal, State and Local Government agencies involved in an emergency. Other services shall participate, as required, to ensure the public's safety.

Agencies involved in an incident will be subject to the Regional rules on inter-agency communication. Radio transmissions will be made in accordance with the directions of the Primary Dispatch Center or controlling agency.

CALLING CHANNEL

Calling Channel base stations will be configured as mobile relays, strategically located to assure complete regional coverage and connected by a suitable network to Primary Dispatch Centers. Simplex operation of the base frequency (866.0125 MHz) will be permitted on the Calling Channel to establish initial contact between agencies for the purpose of determining which Tactical Channel(s) to use for the duration of an incident.

Depending on geographical size and population density, several networks may be necessary to cover the outer areas of the Region. Primary Dispatch Centers and agencies operating base/control stations in the area shall monitor the Calling Channel to provide assistance and/or assign a Tactical Channel to requesting field units.

The Calling Channel shall be used only to make initial contact with other agencies in the Region or with the Primary Dispatch Center in that section of the Region. After contact is established, a tactical or other mutual aid channel must be expeditiously agreed upon or be assigned by the Primary Dispatch Center. The Calling Channel shall not be used as a working channel. It shall be vacated as soon as possible.

TACTICAL CHANNELS (TAC 1 THROUGH TAC 4)

Tactical Channels are reserved for agencies involved in multi-agency communications during emergencies or other occurrences requiring interoperable communications. Tactical Channels, like the Calling Channel, will be strategically located to provide maximum coverage throughout the Region. Design criteria will limit TAC Channel coverage to permit multiple re-use of the channels within the Region, as required, in coordination with adjacent regions to prevent or minimize interference.

TAC Channel coverage design shall ensure that at least one channel is available for each section of the Region. Multi-agency communications events will be coordinated by the Primary Dispatch Center or assigned to the controlling agency. The coordinating agency shall relinquish control of the channels when the incident is cleared.

CROSS SYSTEM PATCHES

Cross system patches to existing day to day systems, other mutual aid channels or long range communications systems must be manually controlled. Automatic patches are not permitted. Cross system patches are normally handled by the Primary Dispatch Center in the section of the Region involved.

IMPLEMENTATION SCHEDULES

Many of the eligibles for these frequencies are units of Local or State Government. The nature of governmental planning and budgeting, combined with difficult revenue constraints, prohibits these eligibles from implementing newer technology systems in the normal time required by the FCC Rule (8 month conventional/12 months trunked).[1] In many cases, public safety systems will require multi-year phased implementation schedules requiring construction times three to five times longer than private or commercial systems. Regional, wide area and statewide systems as allowed and encouraged by the plan will certainly require these longer periods to construct.

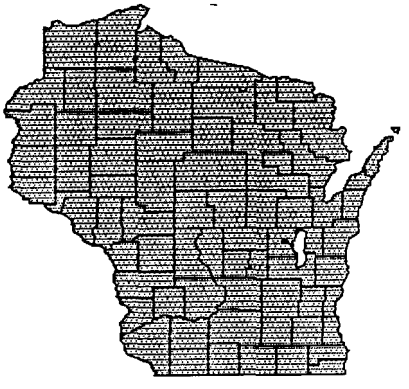
In view of these known situations, this plan establishes an extended implementation schedule ("slow growth") in accordance with the below cited FCC rules and regulations. This extended implementation schedule is available to all eligible applicants by stating "Slow Growth" on the license application. The applicants will be further required to submit documentation showing the funding, construction and implementation schedule proposed for the system. Proposed systems must adhere to the channel loading requirements as contained on Page 21 of this plan

For all other purposes, the FCC rules shall govern, specifically section 90.629 as it applies to the requirements for extended implementation schedules.

[1]FCC Rules and Regulations S 90.155(a) and S 90.631(c)

APPENDIX A

Convening Meeting Notice



800 Megahertz
Public Meeting Notice

Having been duly certified to the Federal Communications Commission (FCC) by the Associated Public-Safety Communications Officers, Inc. (APCO) as the Convenor of an initial meeting of representatives of parties eligible for radio licensing in the FCC's Public Safety and Special Emergency Radio Services to establish a Regional Planning Committee in the State of Wisconsin (Region 45), as described herein-after), I hereby give public notice that such an initial meeting will be held on April 28, 1989 at State Patrol Headquarters District #3, Hwys 41 and 151, Fondulac, WI. beginning at 10:00AM. The Wisconsin Region is one of 48 established by the FCC, throughout the United States.

The responsibility of the Regional Planning Committee well be to develop a Plan for the use of frequencies in the 821-824 and 866-869 megahertz bands allocated by the FCC for use by such Licensees. Parties interested in participation in the regional planning process should contact me.

This Public Notice is in accordance with the FCC's Report and Order in General Docket No. 87-112 adopted by the FCC on November 24, 1987.

The Report and Order was based in large part on the Final Report of the National Public Safety Planning Advisory Committee, which was submitted to the FCC on September 9, 1987.

Copies of both the Report and Order and the Final Report are available from the FCC's duplication contractor, International Transcription Services, Inc., Suite 140, 2100 M Street, N.W., Washington, D.C. 20037. Phone (202) 857-3800.

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February 17, 1989

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APPENDIX B

Meeting Minutes